

## **Environmental Science and Engineering**

### **IS PLASTIC A MORE APPROPRIATE MATERIAL FOR SEWAGE SCREW PUMPS?**

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The Archimedes screw pump has been around, it has been speculated, since before Archimedes: in the Hanging Gardens of Babylon. While smaller, more precise versions are employed in the space shuttle and the Debakey ventricle assist device, the more common use now is in water drainage and sewage treatment. They aid settlement and separation processes because of relatively low influent disturbance, require energy input comparable to other type pumps, and may be more adaptable to non-electrical power sources. Typically, these pumps are epoxy coated steel and immensely heavy and cumbersome: thus expensive to produce, move, and maintain – and can be a crippling expense to small municipalities.

Our study looks at the possibility of steel reinforced plastic screw pumps, examines open vs. closed (tubed) designs relative to hydrogen sulfides and algae attachment, and considers different possible configurations. With no significant biological factors to consider, plastic may be the key to dramatically lowering production, maintenance, and operational costs. This, in turn, may be a component of lower cost water treatment systems that could reduce rates of waterborne illnesses in LDCs.